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FIG: 1.

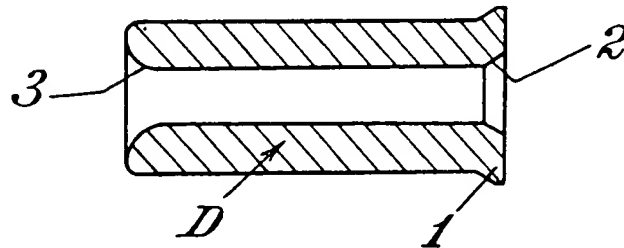


FIG: 2.

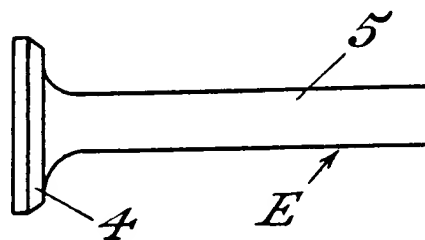
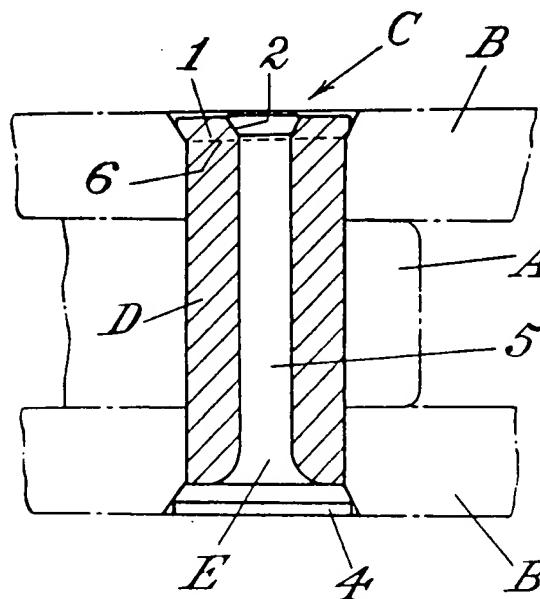


FIG: 3.



PATENT SPECIFICATION 251



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PROVISIONAL SPECIFICATION

Improvements in or connected with Chains of the Pivoted Link Type

We, MAJOR AND COULSON, LIMITED, a British Company, of 47, Broad Street, Glasgow, S.E., and JOHN BRIDIE MAJOR, a British Subject, of the said Company's address, do hereby declare the nature of this invention to be as follows:—

This invention refers to chains of the pivoted link type, i.e. chains which are made up of links connected to each other by pivot pins. The invention refers particularly to the cutter-chains of coal cutting machines, but it is applicable also, for example, to conveyor or elevator chains. In cutter-chains pick box links for holding cutter picks alternate with connecting links, each connecting link at its ends fitting between side pieces of the pick box links and being connected thereto by a pivot pin passing through a hole in the two side pieces and the connecting link.

The common method of connecting chain links is by means of a pivot pin which is riveted to hold it in place. This method has the advantage of simplicity, but the disadvantage arises of having to harden a pin to withstand the wear without hardening its end, to enable it to be riveted.

According to this invention, a pivot connection for the links of a chain of the pivoted link type comprises a tubular bush for insertion from one side of the chain into the registering link holes, with a head or equivalent to hold it at that side, the bush stopping short of the second side of the chain when inserted, and in conjunction therewith a pin adapted to be inserted from the second side of the chain into the bush, and having a head or equivalent at one end to bear at the second side against the link and a tip at the other end to be riveted down in the end of the bush.

An example of construction as applied to cutter-chains is as follows:—

The thickness of the chain from side to side is $2\frac{1}{8}$ inches, and the pivot pin holes are countersunk at both sides of the chain. The bush, made of hard steel, is 1 inch outside diameter, with a countersunk head $1\frac{1}{2}$ inch diameter, and is $2\frac{1}{2}/_{32}$ inch long. Its internal diameter is $\frac{3}{8}$ inch. At the head end, the bore of the bush is countersunk and at the opposite end the bore is expanded and rounded off.

The pin is very similar in form to a mushroom valve for a petrol engine, being $2\frac{23}{32}$ inch long, with a stem $23/_{64}$ inch diameter and a head $1\frac{1}{2}$ inch diameter rounded into the stem. It is made of relatively soft steel.

The bush is inserted from one side into the registering holes of the links, its countersunk head bearing on the countersink of the hole at that side. The pivot pin is inserted from the second side, its stem passing through the bore of the bush, from which it projects slightly at the first side when the head of the pin is bearing against the countersink in the hole at the second side and against the end of the bush. Finally, the projecting tip of the stem of the pin is riveted down into the countersink at the end of the bore of the bush.

As a modification of the foregoing instead of the bush having a countersunk head, the head may be separate from the rest of the bush in the form of a ring.

Dated this 10th day of March, 1939.

J. ALFRED BREWER,
Chartered Patent Agents,
58, St. Vincent Street, Glasgow, C.2,
Agents for the Applicants.

COMPLETE SPECIFICATION

Improvements in or connected with Chains of the Pivoted Link Type

We, MAJOR AND COULSON, LIMITED, a British Company, of 47, Broad Street, Glasgow, S.E., and JOHN BRIDIE MAJOR, a British Subject, of the said Company's address, do hereby declare the nature of this invention to be as follows:—

[Price 1/-]

this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention refers to chains of the

pivoted link type, i.e. chains which are made up of links connected to each other by pivot pins. The invention refers particularly to the cutter-chains of coal cutting machines, but it is applicable also, for example, to conveyor or elevator chains. In cutter-chains, pick box links for holding cutter picks alternate with connecting links, each connecting link at its ends fitting between side pieces of the pick box links and being connected thereto by a pivot pin passing through a hole in the two side pieces and the connecting link.

The common method of connecting chain links in chains for heavy duty is by means of a pivot pin which is riveted to hold it in place. This method has the advantage of simplicity, but the disadvantage arises of having to harden a pin to withstand the wear without hardening its end, to enable it to be riveted.

According to this invention, a pivot connection for the links of a chain of the pivoted link type comprises a tubular bush of hardened steel for insertion from one side of the chain into the registering link holes, with a head or equivalent to hold it at that side, and in conjunction therewith a pin of relatively soft metal adapted to be inserted from the second side of the chain into the bush and having a head or equivalent at one end to bear at the second side against the link and a tip at the other end which is riveted down on the end of the bush, to secure the bush and pin in place in the chain.

An example of construction as applied to the cutter-chain of a coal cutting machine will now be described with reference to the accompanying drawing, in which:—

Figure 1 shows the bush in axial section,

Figure 2 shows the pin, and

Figure 3 shows the pivot assembly.

Figure 3 shows connecting link A, pick box links B, and connection C.

The connection C comprises a tubular bush D of hardened steel and a pivot pin E. At one end, the bush D has a countersink head 1, and the bore of the bush at that end is countersunk at 2. At the opposite end, the bore is expanded and rounded off at 3.

The pin E is very similar in form to a mushroom valve for a petrol engine, having a head 4 and stem 5. It is made of mild steel.

In assembling the connection, the links A and B are placed with their holes registering, the holes in the links B being countersunk at both faces of the chain. The bush D is inserted from one side (from above in Figure 3) its head 1 bearing on

the countersink of the link hole at that side and its other end stopping short at the beginning of the countersink at the other side of the chain. The pin E is then inserted from the second side of the chain, its stem 5 passing through the bore of the bush D so that the tip of the stem projects slightly beyond the head 1 of the bush, and the head 4 of the pin E bearing against the countersink in the link hole at the second side of the chain. Finally, the projecting tip of the stem is riveted down into the countersink 2 of the bore of the bush D. Being a pivot connection, the bush and pin assembly is free to turn relative to the links A and B.

As a modification of the foregoing, instead of the bush having a countersunk head, the head may be separate from the rest of the bush in the form of a ring, the arrangement being as if the bush D were divided on the dotted line 6 of Figure 3.

It has been proposed to provide, for cycle and like chains, a pivot connection which is readily dismantlable and comprises a tubular bush insertible into the registering link holes from one side of the chain with a head at that side, and a pin headed at both ends and slotted lengthwise for part of its length from one end to render it springy so that the head at the slotted end can be pushed through the bush and on reaching the other side expands and locks the assembly.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A chain of the pivoted link type, having a pivot connection comprising a tubular bush of hardened steel for insertion from one side of the chain into the registering link holes with a head or equivalent to hold it at that side, and in conjunction therewith a pin of relatively soft metal adapted to be inserted from the second side of the chain into the bush and having a head or equivalent at one end to bear at the second side against the link and a tip at the other end which is riveted down on the end of the bush to secure the bush and pin in the chain.

2. A chain having a pivot connection according to Claim 1, characterised by the ends of the connection being flush with or below the side faces of the chain, the link holes being countersunk or enlarged to receive the head or equivalent of the bush at one side and that of the pin at the other side, while the tip of the pin when riveted down comes within the link hole at that side.

3. A chain of the pivoted link type having a pivot connection substantially as 130

described with reference to the accompanying drawing.

Dated this 5th day of March, 1940.
J. ALFRED BREWER,
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58, St. Vincent Street, Glasgow, C.2,
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